

## CLAIMS

What is claimed is:

1. A labeled acyl carrier protein comprising: an acyl carrier protein having bonded thereto a non-radioactive label.
2. The labeled acyl carrier protein of claim 1, wherein the acyl carrier protein is an apo-acyl carrier protein.
3. The labeled acyl carrier protein of claim 1, wherein the acyl carrier protein is a holo-acyl carrier protein.
4. The labeled acyl carrier protein of claim 1, wherein the acyl carrier protein is an acylated-acyl carrier protein.
5. The labeled acyl carrier protein of claim 1, wherein the acyl carrier protein is derived from *E. coli*.
6. The labeled acyl carrier protein of claim 1, wherein the non-radioactive label is a fluorophore.
7. The labeled acyl carrier protein of claim 1, wherein the non-radioactive label is a fluorophore covalently bonded to a tyrosine residue of the acyl carrier protein.

8. The labeled acyl carrier protein of claim 7, wherein the fluorophore is selected from the group consisting of dansyl, fluorescein, rhodamine, FITC, TRITC, and Texas Red.
9. The labeled acyl carrier protein of claim 7, wherein the fluorophore is selected from the group consisting of dansyl and fluorescein.
10. A labeled acyl carrier protein comprising: an acyl carrier protein having at least one tyrosine residue; the tyrosine residue being modified to include a non-radioactive label covalently bonded thereto.
11. The labeled acyl carrier protein of claim 10, wherein the acyl carrier protein has no more than one tyrosine residue.
12. The labeled acyl carrier protein of claim 10, wherein the acyl carrier protein is an apo-acyl carrier protein.
13. The labeled acyl carrier protein of claim 10, wherein the acyl carrier protein is a holo-acyl carrier protein.
14. The labeled acyl carrier protein of claim 10, wherein the acyl carrier protein is an acylated-acyl carrier protein.
15. The labeled acyl carrier protein of claim 10, wherein the acyl carrier protein is derived from *E. coli*.

16. The labeled acyl carrier protein of claim 10, wherein the non-radioactive label is a fluorophore.
17. The labeled acyl carrier protein of claim 16, wherein the fluorophore is selected from the group consisting of dansyl, fluorescein, rhodamine, FITC, TRITC, and Texas Red.
18. The labeled acyl carrier protein of claim 16, wherein the fluorophore is selected from the group consisting of dansyl and fluorescein.
19. A kit for investigating reactions involving acyl carrier proteins, the kit comprising a container having disposed therein an acyl carrier protein having bonded thereto a non-radioactive label.
20. The kit of claim 19, wherein the acyl carrier protein has at least one tyrosine residue, and the non-radioactive label is covalently bonded thereto.
21. The kit of claim 20, wherein the acyl carrier protein has no more than one tyrosine residue.
22. The kit of claim 20, wherein the acyl carrier protein is an apo-acyl carrier protein.
23. The kit of claim 20, wherein the acyl carrier protein is a holo-acyl carrier protein.

24. The kit of claim 20, wherein the acyl carrier protein is an acylated-acyl carrier protein.
25. The kit of claim 20, wherein the acyl carrier protein is derived from *E. coli*.
26. The kit of claim 20, wherein the non-radioactive label is a fluorophore.
27. The kit of claim 26, wherein the fluorophore is selected from the group consisting of dansyl, fluorescein, rhodamine, FITC, TRITC, and Texas Red.
28. The kit of claim 26, wherein the fluorophore is selected from the group consisting of dansyl and fluorescein.
29. A method of making a holo-acyl carrier protein having a non-radioactive label affixed thereto, the method comprising:
- (a) reacting an apo-acyl carrier protein having at least one tyrosine residue with a chemical reagent capable of covalently bonding an amino moiety to the tyrosine residue, to thereby yield an apo-acyl carrier protein having an amino- modified tyrosine moiety; then
  - (b) covalently bonding a non-radioactive label to the amino-modified tyrosine moiety of step (a), thereby to yield an apo-acyl carrier protein having a non-radioactive label covalently bonded thereto; and then
  - (c) reacting the apo-acyl carrier protein of step (b) with a holo-acyl carrier protein synthase under time and conditions sufficient to convert the apo-acyl carrier protein to a holo-acyl carrier protein having a non-radioactive label affixed thereto.

30. A method of making an acylated-acyl carrier protein having a non-radioactive label affixed thereto, the method comprising:
- (a) reacting an apo-acyl carrier protein having at least one tyrosine residue with a chemical reagent capable of covalently bonding an amino moiety to the tyrosine residue, to thereby yield an apo-acyl carrier protein having an amino- modified tyrosine moiety; then
  - (b) covalently bonding a non-radioactive label to the amino-modified tyrosine moiety of step (a), thereby to yield an apo-acyl carrier protein having a non-radioactive label covalently bonded thereto; then
  - (c) reacting the apo-acyl carrier protein of step (b) with a holo-acyl carrier protein synthase under time and conditions sufficient to convert the apo-acyl carrier protein to a holo-acyl carrier protein having a non-radioactive label affixed thereto; and then
  - (d) reacting the holo-acyl carrier protein of step (c) with an acyl-ACP synthetase under time and conditions sufficient to convert the holo-acyl carrier protein to an acylated acyl carrier protein having a non-radioactive label affixed thereto.